
file name: 1186 F0965 HighLevel & Detailed Design Spec for FAS Feature Key Generator.doc
created: XXXXXXXXXX last saved: XXXXXXXXXXXX

High Level and Detailed Design Specification

Wireless 3G NextGen Rel 1.0

PPS ID: 1186 Feature ID: FAS Feature Key Generator

FAS Feature Key Generator HLD-DD

APPROVALS

| TITLE | Printed Name: | SIGNATURE: | DATE: |
|--------------------|----------------|------------|-------|
| Product Management | Lee Rosenbaum | | |
| Engineering Lead | Ching Kung | | |
| Program Manager | Carolyn Heide | | |
| Architect | Christian Rigg | | |

Exact signatures required will be determined by the EMT Team

DOCUMENT CONTROL: _____ RELEASE DATE: _____

RECORD OF REVISIONS

| ORIGINATOR: | | REVISION LEVEL: RELEASE DATE: | |
|----------------------------|---|----------------------------------|--------|
| REVISED SECTION/PARAGRAPH: | | | |
| Marko Pfaff | Draft | 0.0 | XXXXXX |
| Marko Pfaff | Enhanced Section 7, Design | 0.1 | XXXXXX |
| Marko Pfaff | Baseline Document for Release Version 1.0 | 1.0 | XXXXXX |
| | | | |

Note: This document is controlled electronically. Controlled hard copies are located in Document Distribution Points and/or bear a red “CONTROLLED” stamp. Other hard copies, unless specifically printed for an auditor’s reference, are uncontrolled and invalid.

1 Purpose And Overview

This document describes the detailed design and implementation of the FAS Feature Key Generator.

1.1 Executive Summary

This section should list the summary of features supported.

2 Scope

2.1 Intended Audience

This Design Specification document is intended for technical managers, design engineers, test engineers, supporting engineers and technical publications in this project.

2.2 Environment/Infrastructure

The Feature Key Generator is a component of the Feature Activation System. Please refer to the FAS System Functional Specification for a system overview.

2.3 Assumptions

N/A

2.4 Limitations

N/A

3 Definitions

3.1 Acronyms and Abbreviations

This section explains and defines words and acronyms that are used throughout this document that are not found in the Glossary of Terms for Product/Technology Development.

| Term | Definition |
|-------|---|
| MSID | Mobile Station ID |
| IMSI | International Mobile Station Identity [E.212] |
| MIN | Mobile Identification Number [TIA/EIA-41-E] |
| IRM | International Roaming MIN [TIA TSB-29] |
| NAI | Network Access Identifier e.g. "user@realm" [RFC-2486] |
| 3GPP2 | 3 rd Generation Partnership Project 2 (cdma2000) |
| PDSN | Packet Data Serving Node |
| BS | Base Station |
| RN | Radio Network (sets of BS and PCF) |
| PPP | Point-to-Point Protocol |

| | |
|----------------------|--|
| OAM&P | Operations, Administration, Maintenance, & Provisioning |
| RADIUS | Remote Authentication Dial In User Service |
| AAA | Authorization, Authentication, and Accounting |
| MIP | Mobile IP |
| IP | Internet Protocol |
| PCF | Packet Communication Facility – Intermediary network element between a BS and a PDSN |
| P _i | S.R0005-A Reference Point between PDSN and AAA |
| A _{quarter} | S.R0005-A Reference Point between the BS and the PDSN. It is subdivided into A8 to A11 |
| A8 | Interface that carries user traffic between the BS and the PCF |
| A9 | Interface that carries signaling information between the BS and the PCF |
| A10 | Interface that carries user traffic between the PCF and the PDSN |
| A11 | Interface that carries signaling information between the PCF and the PDSN |
| Actor | Collective term for user, operator, or external system |
| | |

4 Applicable Documents and External Standards Specifications

This section shall list the number, title, revision and date of all documents referenced in this High Level / Detailed Software Design Specification. This section should include the list below as well as any other applicable documents (i.e. international standards, federal standards, etc).

| Number | Title |
|----------------|---|
| Q0002D | Carrier System Manual Part 4: DESIGN CONTROL |
| E0129 | Glossary of Terms for Product/Technology Development |
| 3G 3.0 FFD #44 | CommWorks Wireless 3G Release 3.0 Feature Functional Description (FFD) for Feature # 44 |
| F0056/S0053 | Product Requirements Definition |
| E0146 | System Functional Specification Procedure |
| E0130 | Peer Review Procedure |

| | |
|-------------------------------|--|
| E0096 | Engineering Management Team Guidelines |
| 3GPP2 P.S0001-A-1 | Wireless IP Network Standard (a.k.a.TIA/EIA/IS-835) |
| 3GPP2 A.S0001-A | 3GPP2 Access Network Interfaces Interoperability Specification |
| 3GPP2 S.R0005-A | Network Reference Model for cdma2000 Spread Spectrum Systems |
| RFC 1661 | The Point-to-Point Protocol (PPP) |
| RFC 2138 | Remote Authentication Dial In User Service (RADIUS) |
| FAS SyFS | FAS System Functional Specification |
| FAS Feature Key Generator SFS | FAS Feature Key Generator Software Functional Specification |

5 System Functional Overview

The Feature Key Generator is responsible for generating cryptographically signed Feature Keys and Feature Key Files. Please refer to the FAS Feature Key Generator SFS for an overview.

6 High-Level Design

The FKEY Generator shall be realized as a CGI application. It is a single threaded program which performs one thread per HTTP request.

The "FKEYGServer" is logically the server instance which controls the internal management including data flow and object handling.

The "FeatureKey" object is used for modelling the Feature Key. It includes all the Feature Key attributes and methods to control and access these attributes.

The "Repository" is the instance which controls the Feature Key Repository access.

The "UIHandler" includes all GUI related functionality and takes care of preparing the data which will be displayed on the Webbrowser.

7 Detailed Design

The section will contain a detailed description of the components that make up the feature. This could be a detailed description of the State Machine design, Data Flow Diagram, Event Sequence Diagram, Object Modelling, or Psedo Codes, etc. A combination of the above design techniques should be used.

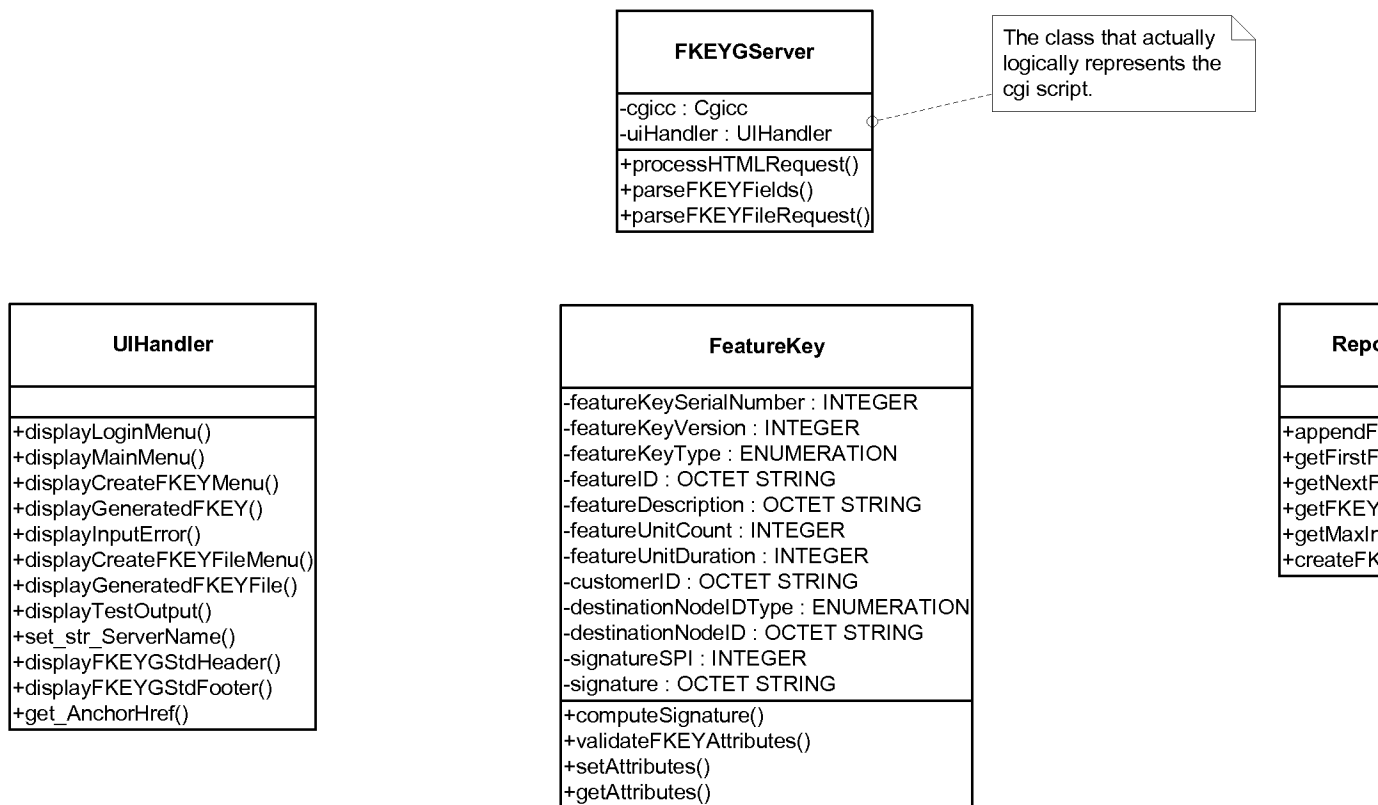
7.1 Applications Program Interfaces

7.2 Major Data Structures

The section will contain a detailed description of the major data structures defined for this feature (if applicable).

7.2.1 FKEY Generator Top Level Class Diagramm

Class Diagram - Feature Key Generator



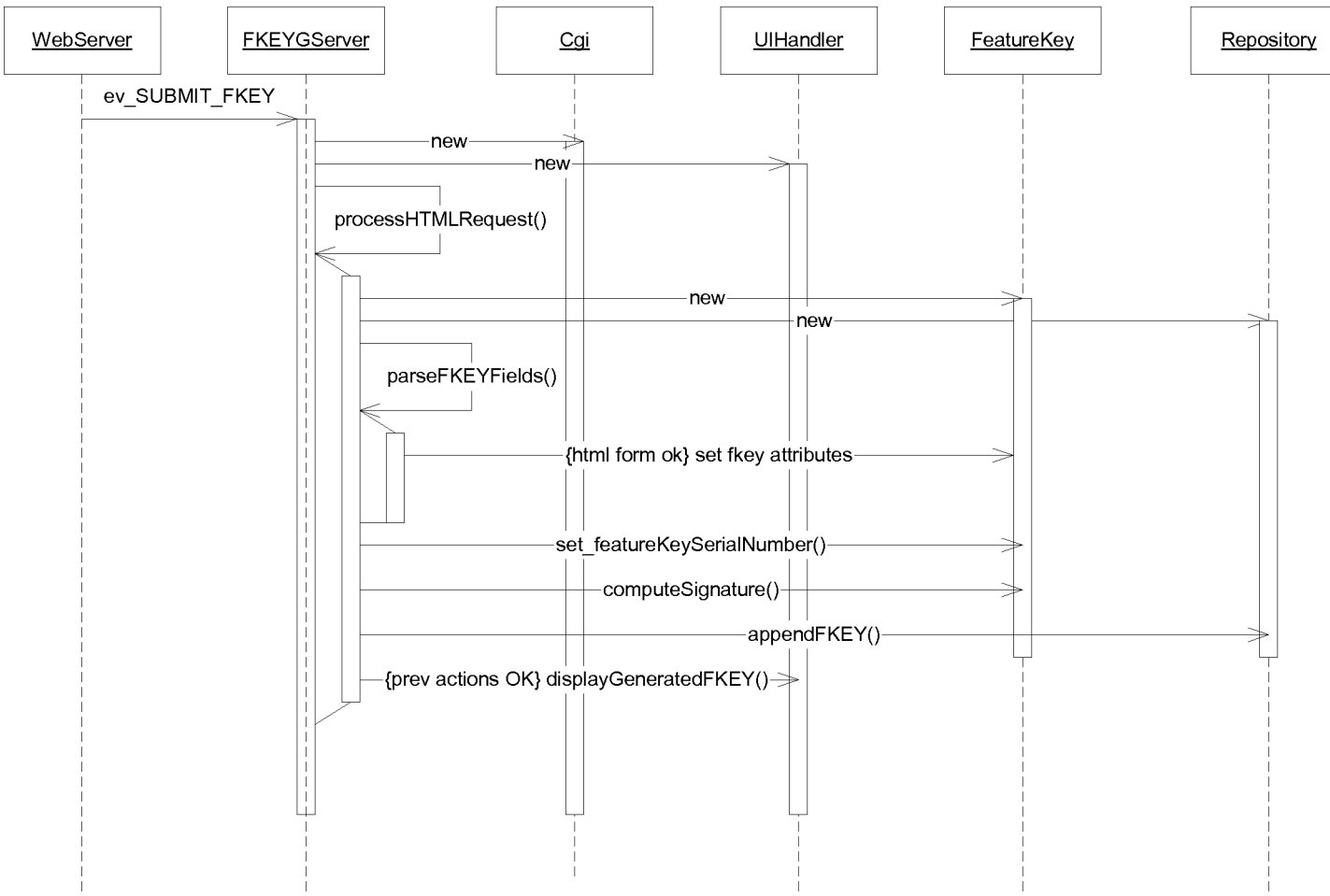
7.3 Modules impacted

The existing modules that are impacted by this feature should be listed in this section (if applicable)

7.4 Sequence Diagrams

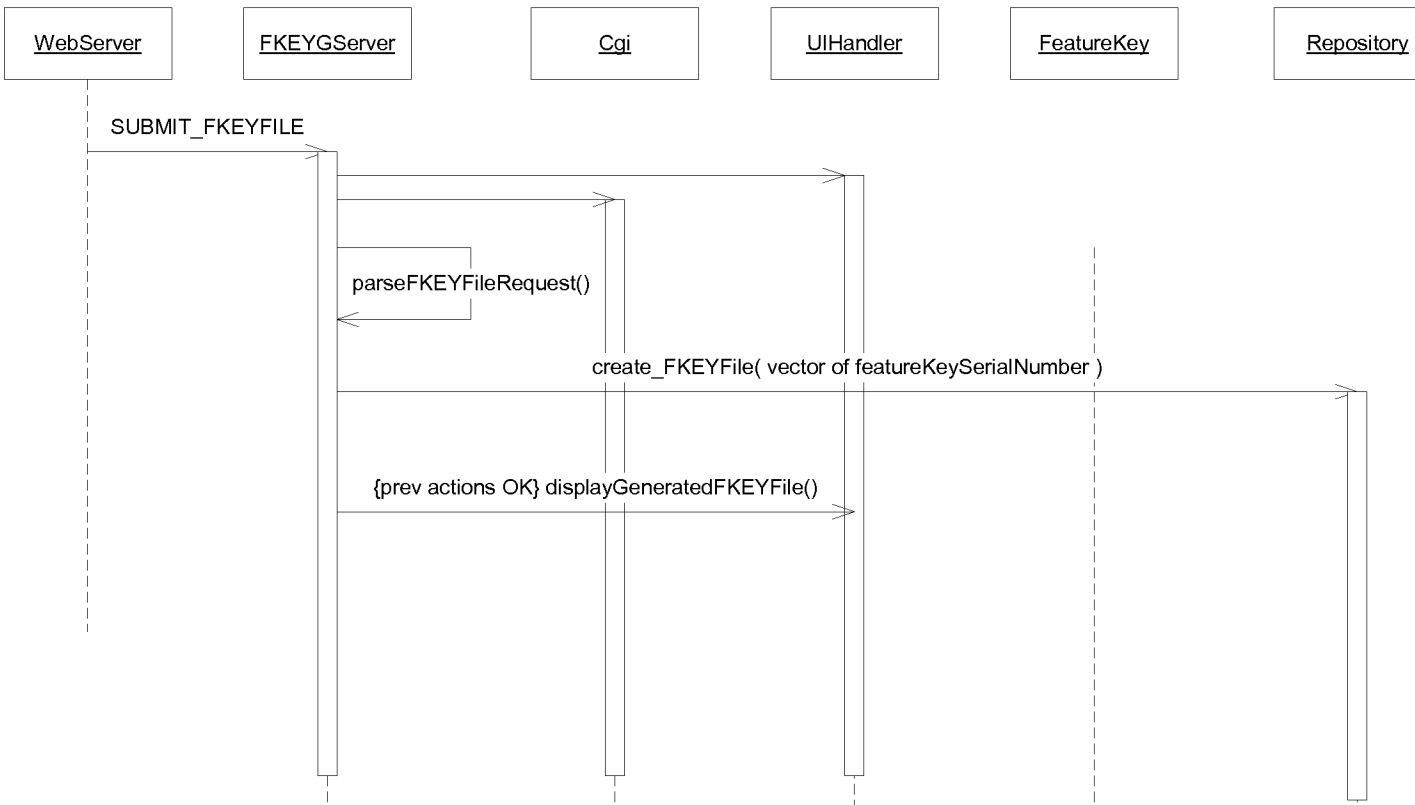
7.4.1 FKEY Generator Sequence Diagram - Create Feature Key

Sequence Diagram - FKEYGenerator - createFeatureKey



7.4.2 FKEY Generator Sequence Diagram - Create Feature Key File

Sequence Diagram - FKEYGenerator - createFeatureKeyFile



8 RADIUS Attributes Support

This section should include all the Radius Attributes that are supported by this feature.

9 Configuration and Command Line interfaces

This section describes all the configurations and CLI commands for this feature.

10 MIB Definitions

This section contains the MIB definitions in detail for this feature.

The description of the MIB objects should be as complete and as detailed as possible, which will be reviewed by MIB Guardians, Product Manager and Tech Comm people.

11 Detailed SYSLOG information

This section should include a detailed description of at least the following four levels of syslog criticality of events: CRITICAL, UNUSUAL, COMMON, and INFORMATIONAL.

12 Debugging Facilities

This section should include a detailed description of the debugging facilities available to the developers and the testers other than the Syslog information, such as built-in test, MIB counters, and built-in traces, data structure audit, hidden commands. etc.

13 Unit Test Plan and Test Cases

Each module or feature that is developed in the Wireless projects will undergo unit testing. The unit testing to be carried out for this feature will be described in detail in this section. Please specify the unit test plan and test cases as complete as possible. This section will be reviewed with the peer engineers and ITG engineers.

13.1 Use Case: Login

1) Use the URL address in your webbrowser:

`http://ServerName/~fkeyg/cgi-bin/FKEYGServer.cgi`

2) Click on "Enter"

Verify that the display "Feature Key Main Menu" appears.

13.2 Use Case: Create Feature Key

In "Feature Key Main Menu":

1) Click on "Create a Feature Key"

2) Fill in the Feature Key parameters

3) Click "Submit"

Verify that the display "Generated Feature Key" displays the correct Feature Key parameters.

13.3 Use Case: Create Multiple Feature Keys

1) Repeat Use Case: Create Feature Key

Verify that many Feature Keys can be created.

Verify that Feature Keys with different parameters can be created.

Verify that the featureKeySerialNumber is unique for each Feature Key.

13.4 Use Case: Create Feature Key File

In "Feature Key Main Menu":

1) Click on "Create a Feature Key File"

2) Select one or multiple Feature Key(s) from the list

3) Click "Submit".

4a) Click on "Download Feature Key File" to view the Feature Key File.

4b) Click on "Download Feature Key File" to download the Feature Key File.

5) Click "Continue"

Verify that the FKEY File can be viewed.

Verify that the FKEY File can be downloaded.

Verify the content and syntax of the FKEY File.

14 Memory And Performance requirement

N/A

15 Other Considerations and Constraints

N/A